COLLECTING MICROVELIA IN HAWAII.

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On the third of August, 1924, in company with a party of friends, the writer spent a day in the rain forest near Honolulu. Returning home late in the day he had the good fortune to find eight specimens of *Microvelia pacifica* Kirkaldy. The specimens, all winged and representing both sexes, were collected in a small temporary pool in the road. The basin of the pool was formed by the wheels of passing automobiles sinking into the mud and was about three feet in length, a few inches wide, and three or four inches deep. The water had fallen during an afternoon shower as there was no water there earlier in the day. This showed that the bugs had flown into the pool during the day. It is said that specimens of *Microvelia* are sometimes collected at lights at night but the author has never so taken them.

Wishing to study *Microvelia pacifica* Kirk. afield, the writer spent a part of a day (August 9) collecting and observing them. Walking up Monoa Valley a small body of water was observed near the road. This proved to be a pool which was spring-fed and in it there was a luxuriant growth of *Spirogyra*. The pool was about ten feet long, about four feet wide at its greatest width, and eighteen inches deep. The water was entering at one end of the pool and leaving at the other. In the pool and especially in the water buffalo tracks at its lower end, were to be found *Microvelia*. Males and females of both winged and wingless forms, as well as a number of nymphs were taken. The alate adults far outnumbered the apterous ones, the latter being, perhaps, the progeny of the former.

The adults and nymphs remained at the water's edge, the former often running upon the moist earth bank. Both nymphs and adults were very active. The collecting spoon[1] was found to greatly facilitate the collection of specimens. A search was made for the eggs but none was found. One adult *Buenoa* and a few mosquito larvae were the only other inhabitants observed in the pool.

After spending several hours here we found our way farther up the valley. The road crossed a rapid little stream and it was

[1] "Handy Collecting Apparatus," Entomological News, XXXV.

decided to search there for the little surface dwellers. Upstream a few yards from the bridge the *Microvelia* were taken in great numbers. Dredging among sparse vegetation along the edge of the water with a water net resulted in a good catch. Then a pool between a large boulder and the bank was examined and congregated there were more live *Microvelia* than the writer had ever seen in one place. The water here was about four inches deep and shaded by vegetation which grew in and over it. *Microvelia* nymphs and adults literally covered the surface of the pool. There were more nymphs than adults, and of the latter only one or two were winged.

Several mating pairs of apterous bugs were observed. After much effort one such mating pair was observed under the hand lens. The male grasped the body of the female firmly with his anterior legs. Sometimes the intermediate legs touched the body of the female slightly, as if to steady and not to grasp. The posterior legs were entirely free from the body of the female. Once during the observation the male was seen to vibrate the intermediate and posterior legs.

In disturbing the vegetation several large *Cicadellid* nymphs were frightened into the water. As soon as they struck the surface of the water they were pounced upon by great numbers of the hungry little bugs. Keeping in mind the apparent paucity of insects along the stream, as well as the great numbers of *Microvelia,* it is not surprising that the latter were in a half-starved condition.

A search for eggs was finally rewarded by the finding of a small floating stick, on which several eggs had been deposited. They looked not unlike the eggs of the six species of *Microvelia,* reared by the writer, at the University of Minnesota during the past year.

A number of nymphs were taken home for more careful examination. A series of measurements indicated that this species has five nymphal stages. This point is hard to determine definitely by simply measuring nymphs collected in the field. If one could always be sure of the sex of the specimens measured the matter would be much simpler. To be absolutely certain of the number of stages, the bug should be reared. This the writer proposes to do if his stay in Hawaii permits.